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Application Number	09/764,668
Filing Date	1/18/2001
First Named Inventor	KRISHNAMURTHY
Art Unit	2663
Examiner Name	CHANG, RICHARD
Attorney Docket Number	HRL045

Total Number of Pages in This Submission

ENCLOSURES (Check all that apply)

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Page 1 of 1

PATENT NO. : US 6,990,075
APPLICATION NO.: 09/764,668
ISSUE DATE : Jan. 24, 2006
INVENTOR(S) : Srikanth, Krishnamurthy, Prasun Sinha, Son K. Dao

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

The error appears on the Cover Page of the issued patent in the first letter of the Assignee's name. The issued patent reads: "MRL Laboratories, LLC, Malibu CA (US)" and it should read "HRL Laboratories, LLC, Malibu, CA (US)".

This error appears to be a typographical error attributable to the USPT Office, as the Assignment recordation paperwork and the issue fee transmittal (copies of both forms are attached) show correct spelling of the Assignee's name.

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US006990075B2

(12) **United States Patent**
Krishnamurthy et al.

(10) Patent No.: **US 6,990,075 B2**
(45) Date of Patent: **Jan. 24, 2006**

(54) **SCALABLE UNIDIRECTIONAL ROUTING
WITH ZONE ROUTING PROTOCOL
EXTENSIONS FOR MOBILE AD-HOC
NETWORKS**

(75) Inventors: **Srikanth Krishnamurthy**, Riverside,
CA (US); **Prasun Sinha**, Middletown,
NJ (US); **Son K. Dao**, Northridge, CA
(US)

(73) Assignee: **MRI Laboratories, LLC**, Malibu, CA
(US)

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 767 days.

(21) Appl. No.: **09/764,668**

(22) Filed: **Jan. 18, 2001**

(65) **Prior Publication Data**
US 2001/0033556 A1 Oct. 25, 2001

Related U.S. Application Data

(60) Provisional application No. 60/182,944, filed on Feb.
12, 2000.

(51) Int. Cl. **H04J 3/14** (2006.01)

(52) U.S. Cl. **370/236; 370/329; 370/400**

(58) Field of Classification Search **370/236,**
370/238, 329, 400, 408

See application file for complete search history.

(56) **References Cited**

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(Continued)

Primary Examiner—Ricky Ngo

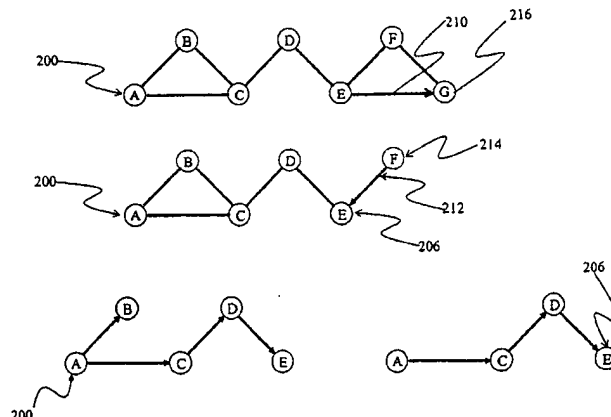
Assistant Examiner—Richard Chang

(74) *Attorney, Agent, or Firm*—Tope-McKay & Associates

(57) **ABSTRACT**

The present invention provides a method and apparatus for extending a zone routing protocol. The invention is configured to provide a robust scalable framework for routing data in wireless ad-hoc networks when unidirectional links 210 are present. When the reverse path from a destination node (the tail) of a unidirectional link 210 to the originating node (the head) of the link is beyond a designated length, the invention is configured to revert to an on-demand search mechanism. The on-demand search mechanism recursively attempts to build a path to the destination 206 by recognizing nodes that have a route to the destination.

36 Claims, 7 Drawing Sheets



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/764,668	01/18/2001	Srikanth Krishnamurthy	HRL045	6275

TITLE OF INVENTION: SCALABLE UNIDIRECTIONAL ROUTING WITH ZONE ROUTING PROTOCOL EXTENSIONS FOR MOBILE AD-HOC NETWORKS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1400	\$300	\$1700	11/01/2005

EXAMINER	ART UNIT	CLASS-SUBCLASS
CHANG, RICHARD	2663	370-236000

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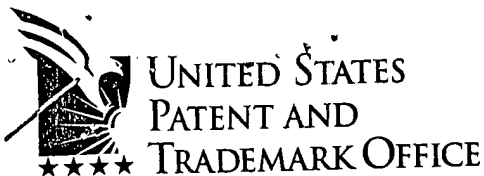
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23852 PACIFIC COAST HWY. #311
MALIBU, CA 90265



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BRIEF: ASSIGNMENT OF ASSIGNOR'S INTEREST (SEE DOCUMENT FOR DETAILS).

ASSIGNOR:
SINHA, PRASUN

DOC DATE: 04/03/2001

ASSIGNOR:
KRISHNAMURTHY, SRIKANTH

DOC DATE: 04/06/2001

ASSIGNOR:
DAO, SON

DOC DATE: 04/16/2001

ASSIGNEE:
HRL LABORATORIES, LLC
3011 MALIBU CANYON ROAD
MALIBU, CALIFORNIA 90265-4799

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